

UNIT 4  
POLYNOMIALS  
DAY 1

Identifying & Classifying Polynomials

Def:

term- is the product of a real # and one or more variables raised to powers.

coefficient- is the real number of a term.

polynomial- is a term or a finite sum of terms, with only nonnegative integer exponents permitted on the variables.

## EXAMPLES

$$6x^2y - 6xy^2 + 12xy$$

$$25x^2 - 4$$

$$-\sqrt{2}x^3$$

$$3$$

$$x^4y^5$$

$$3x^0$$

## NON-EXAMPLES

$$2x^2 - xy^{-2}$$

$$-5x^{-1}$$

$$\frac{3}{x} + 2$$

$$x^3 \sqrt{-2}$$

## Naming a polynomial by # of terms

<u>#of terms</u>	<u>Name</u>	<u>Example</u>
1	Monomial	$-3x^2y^3$
2	Binomial	$2x^2 - 7y$
3	Trinomial	$3a^2 - 4ab + 8b^2$
4	4 term polynomial	$4y^3 + y^2 - 2y + 7$
5	5 term polynomial	$2x^3 - 2x + 6y^2 + 3y + 7$

degree of a term- is the sum of all the exponents appearing on the variables in the term.

Ex:

$$x^4 y^5$$

$$-4x^3 y^2$$

deg 9

5

degree of a polynomial- is the degree of the largest term with in the polynomial.

Ex:

$$3x^2 y - 6xy^2 + 12xy$$

3 3 2

$$x^6 y - 4x^3 y^2 - x^2 + 7$$

7

$$25x^2 - 4$$

2

## Naming by degree of the polynomial:

\*names may only be used when the polynomial contains one variable

<u>Degree</u>	<u>Name</u>	<u>Example</u>
1	Linear	$3x+4$
2	Quadratic	$3a^2-a+5$
3	Cubic	$4y^3-y+12$
4	Quartic	$2x^4-3x^2+9$
5	Quintic	$x^5-4x^3-x+7$

*Square*  $x^5-4x^3-x+7$   
5 4 5

THINK - What is funny about these names? Linear, Quadratic, Cubic, Quartic, Quintic...

Why is an equation of the degree one not called a unic?

Why is an equation of the degree two not called a biic?

Why is an equation of the degree three not called a triic?

Can you tell why Mrs. Buell did NOT go into marketing?

Mathematicians originally named these polynomials by the shape from which they arose. Linear equations stemmed from lines, hence the name linear.

Quadratic equations stemmed from problems involving squares. The Latin root "quadri" means four. But the latin root "quadrus" means square.

Cubic equations stemmed from problems involving three dimensional figures, cubes.

Homework

Classifying Polynomials Worksheet